

JBL PERFORMANCE™ SERIES
OWNER'S GUIDE



AVA7 POWER AMPLIFIER

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READ FIRST! IMPORTANT SAFETY PRECAUTIONS!

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove cover (or back).
No user-serviceable parts inside.
Refer servicing to qualified service personnel.

CAUTION: To prevent electric shock, do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. Do not use attachments not recommended by the product manufacturer, as they may cause hazards.

16. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

17. If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.

18. An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.

19. Do not overload wall outlets, extension cords, or integral convenience receptacles, as this can result in a risk of fire or electric shock.

20. Never push objects of any kind into this product through openings, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

21. The apparatus shall not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, shall be placed on the apparatus.

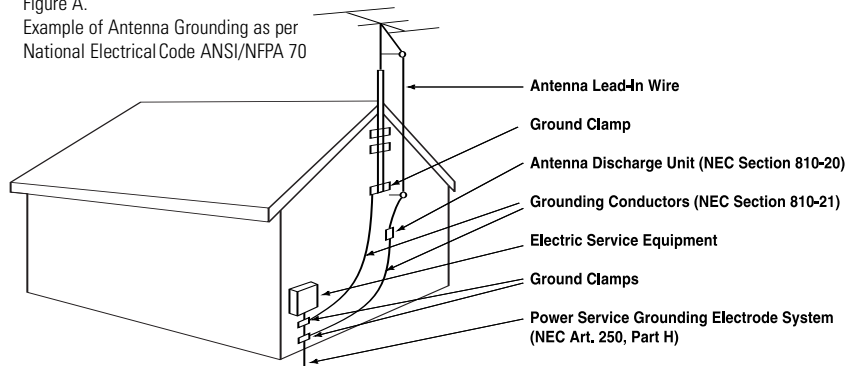
22. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

23. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

24. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

25. The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

Figure A.
Example of Antenna Grounding as per
National Electrical Code ANSI/NFPA 70



INTRODUCTION AND FEATURES

INTRODUCTION

Congratulations on your purchase of this JBL Performance™ Series AVA7 power amplifier! You have purchased a product that embodies the best of what JBL has learned about the emotional power of audio reproduction in more than fifty years of preeminence in the field. This amplifier has been designed and crafted to provide the user with a high level of sonic performance. Special attention has been paid to minimizing the number of components in the audio signal path, resulting in extremely low distortion, excellent transient response, and wide dynamic range. JBL products set new benchmarks in audio technology, and, when used as part of a complete JBL Performance Series system, will bring the ambience and acoustics of some of the world's greatest concert halls and theaters into your home.

To obtain the best performance from this amplifier, please be sure to completely read this user's manual and use the AVA7 only in accordance with its instructions.

FEATURES

The JBL Performance Series AVA7 power amplifier features the following:

Full Seven-Channel Operation

The AVA7 has been designed to integrate well into the world of multichannel audio. It is designed to reproduce the latest development in home theater audio – rear channels, in addition to side channels – to produce a truly enveloping sound field. When coupled with a high-quality subwoofer amplifier, it is a solid foundation on which to build a high-performance home cinema system that will astound the listener with its power and realism.

High Power Capability

The AVA7 provides a satisfying 125 watts per channel of distortion-free audio (<0.01% THD) into 8 ohms. Because of their power capabilities, JBL Performance Series amplifiers have an extremely wide dynamic range, an element critical to realistic home cinema. Sound levels equal to those at original performances are easily re-created in even the largest of home listening environments.

Auto Turn-On and Power-Sequencing Circuitry

When used in a JBL Performance System, the AVA7 can be turned on automatically whenever the surround processor is activated. No longer do you have to get out of that chair to turn on the various pieces of equipment in your entertainment system; just one touch on the remote control of the surround processor, and you're a few seconds away from a truly impressive audio presentation!

Modern amplifiers produce more power per channel (and frequently have more channels) than those of the traditional two-channel stereo era. Due to the high current demands of power amplifiers at the instant of turn-on, the AVA7 amplifier is equipped with a power-sequencing circuit that turns on each amplifier in a delayed sequence, avoiding the large instantaneous current demand (and possible circuit breaker tripping) that may occur should more than one amplifier turn on at the same instant.

Quiet Cooling

The AVA7 utilizes two fans to cool the amplifier channels, ensuring long-term reliability. To reduce fan noise to an absolute minimum, a thermal-sensing and control circuit, which senses increases in temperature within the amplifier and powers the fans at a speed proportional to that temperature increase, has been incorporated in the JBL Performance Series AVA7. As a result, the fan is never turning faster than necessary, and most of the noise that is generated is masked by the program being listened to.

Comprehensive and Isolated Circuit Protection

The AVA7 amplifier employs sophisticated protection circuitry (one for each channel) that senses many possible fault conditions, such as shorted loudspeaker wires or excess power demand, and turns the affected channel(s) off until the fault condition is removed, at which time normal operation is automatically restored. While protection of this sort is not uncommon in today's well-designed amplifiers, a remarkable feature of the JBL Performance AVA7's protection circuits is that they are optically coupled to the signal circuit; there is no direct

electrical connection between the signal path and the protection circuitry. As a result, there can be no coloration of the music, no interaction between protection and amplification, until certain thresholds are exceeded, at which point the channel(s) would turn off completely.

OPERATION AND CONTROLS



1. Power Switch

Pushing this button is all that is required to turn on the AVA7 if it is not part of a JBL Performance Series system and the **Main Switch ②** is in the **On** position. If the amplifier is used as part of a JBL Performance Series system, the **Main Switch ②** and the front-panel push button **Power Switch ①** should both be left in the **On** position. The amplifier will then turn on when the surround processor is activated. See the descriptions of the **Main Switch ②** and **Trigger Jacks ⑦** for more information on turning on the AVA7.

2. Standby Indicator

This indicator on the front-panel **Power Switch ①** will glow red when the amplifier is in the “standby” mode, whether operating as part of a JBL Performance Series system or not. When the AVA7 is in the “on” mode, this light will turn blue.

3. Input Jacks (Ch. 1 Through Ch. 7)

Seven of the output signals from the JBL Performance Series AV1 digital processor are connected to the seven input jacks. We suggest the channels be assigned as follows:

Ch. 1	Right Rear
Ch. 2	Right Side
Ch. 3	Right Front
Ch. 4	Center
Ch. 5	Left Front
Ch. 6	Left Side
Ch. 7	Left Rear

4. Speaker Terminals

Connect the speakers to these terminals, following the normal convention; wire the “+” side of the speaker to the red terminal, and the “-” side to the

black terminal. Wire the speakers with the proper polarity; reversing any speaker’s connections will not damage either the speaker or the amplifier, but will result in poor low-frequency performance and imprecise imaging.

WARNING: Terminals marked with the flash symbol are hazardous when live. External wiring connected to those terminals requires installation by trained personnel, and the use of ready-made lead cords.

NOTE: The minimum load impedance that this amplifier can handle safely is 8 ohms per channel. Using lower impedance loads can damage the unit and will void your warranty!

Wire Run Length	Minimum Gauge
Up to 20' (6m)	16
Up to 50' (15m)	14
Up to 100' (30m)	12

5. External Fuses

The AC mains fuse is located on the back panel of the amplifier. This fuse will not blow unless the amplifier is asked to produce more power than its design allows for a prolonged period or to prevent excessive current draw that could damage internal components during a fault condition. The amplifier has been designed to operate under virtually all conditions. Even momentary short-circuiting of the output (speaker) connections will not ordinarily damage the output circuitry (although this will activate internal protection circuitry and could cause one or more of the channels to temporarily mute until the circuit automatically resets).

Fuse Replacement

To remove the fuse, turn off the power switch and disconnect the power plug from the AC mains. Remove the fuse holder by lifting up the latch at the bottom and pulling the holder out. When looking at the fuse holder as installed on the back panel, the fuse on the right hand side is the active fuse. The fuse on the left is a spare. Remove the fuse on the right side and visually inspect it to see whether it has opened; if it has, discard it and replace it with the spare glass fuse. Reinstall the holder, and reconnect the AC mains. If after replacing the fuse the unit is inoperative, service is required; contact your JBL dealer.

WARNING: Always unplug the amplifier from the AC mains before removing any fuse.



IMPORTANT:

Never install a fuse that has a higher rating than the one specified on the back panel of the amplifier or in the owner’s manual.



6. Main Switch

Place this switch in the **On** position at all times during normal use.

7. Trigger Input and Output Jacks

When using the AVA7 amplifier in a JBL Performance Series system with the AV1 Digital Surround Processor, you will need to use the trigger cable set included with the AV1. Connect the DIN end of the cable to the Trigger Output DIN jack on the rear panel of the AV1, and connect the 1/8" (3.5mm) plug to the **Trigger Input Jack ⑦** on the rear panel of the AVA7.

CONNECTING YOUR JBL PERFORMANCE SERIES SYSTEM

GENERAL INFORMATION

A JBL Performance Series system installation incorporates one power amplifier, in addition to the amplifier(s) used to power one or more subwoofers. If your speaker complement includes the JBL Performance Series PS1400 powered subwoofer module, you may use the amplifier included in each module. If you are using a passive subwoofer, you will need to supply a subwoofer amplifier. All seven channels on the AVA7 are to be used for driving the left, center, right, both side, and both rear speakers.

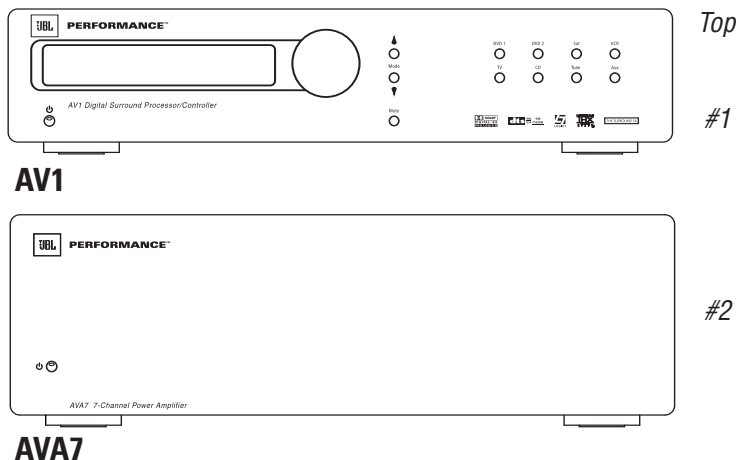
Use the simplified connection diagram on page 8 to help you understand how to connect the AVA7 amplifier to a JBL Performance Series system. This diagram is intended to show the signal flow through the system. For more detail in making these connections, please refer to the owner's manual for the AV1 Surround Processor.

Connect DIN and audio/video cables between system components, as shown on the following pages. Make sure that on all power amplifiers the main and standby power switches are in the On position. Operated in this mode, all of the components will turn on with one touch of the power button on the surround processor's remote control.

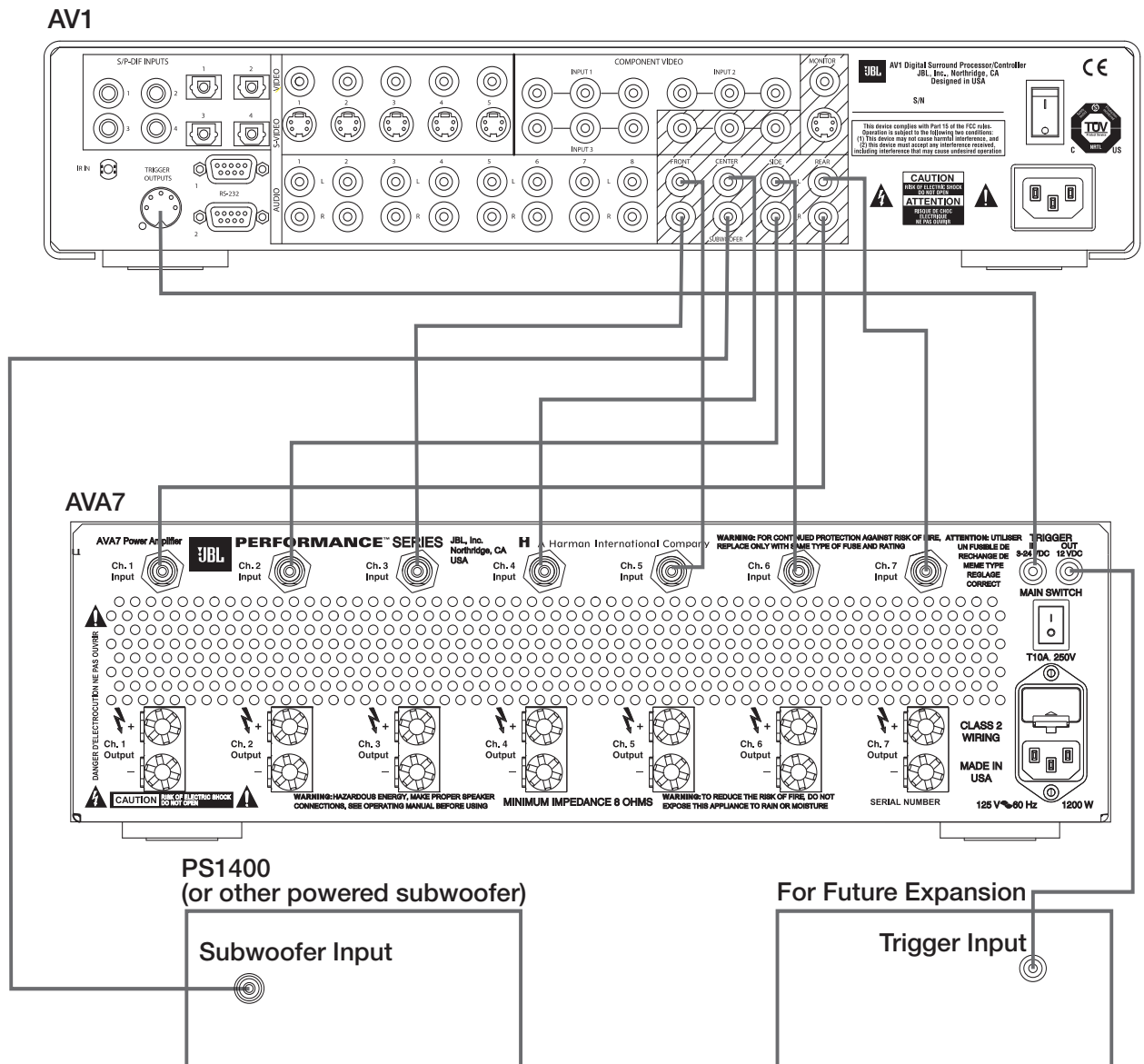
When connecting the source component (such as a DVD player) to the AV1 processor, choose *either* a coaxial *or* an optical digital audio connection, but not both. As a backup, or if analog recordings might be desired in the future, you may also make the left and right analog audio connections.

In addition to the audio connections, select *one* of the following video connections, but not more than one: composite video, S-video or component video. Remember to make the corresponding video monitor output connection from the AV1 to your video display device.

SUGGESTED RACK-MOUNTING ORDER



WIRING DIAGRAM



INSTALLING THE AVA7

Installation of the AVA7 is a straightforward process.

IMPORTANT:

The amplifier must be installed following the directions described below. To ensure adequate performance and safety, never install the amplifier with less free space around the amplifier than what is specified.

Always put amplifiers on the bottom of a stack.

Heavy equipment should not be supported solely by the front-mounting locations. It is recommended that additional rear support be used.

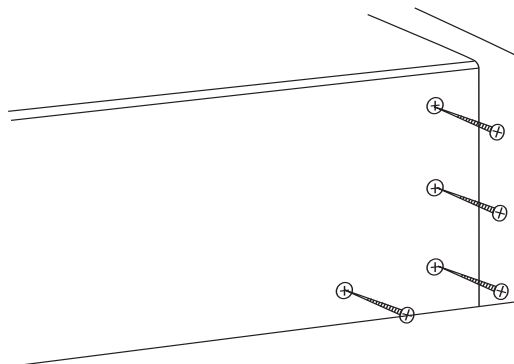
1. The JBL Performance Series AVA7 power amplifier has been designed to be mounted in EIA standard racks, or stacked freestanding as long as there is 4 inches (10cm) of free space around the amplifier (sides and rear). If the AVA7 is being mounted in a rack, it is suggested that its feet be removed prior to installation. If the AVA7 will be stacked with other components, use the feet that came attached to the unit. This will ensure that there is sufficient air space underneath so that heat can be dissipated effectively. Two rack ears are included with the AVA7. To install these rack ears, remove the four machine screws on each of the two side panels (see drawing), hold each rack ear in place, and attach it to the AVA7 using the same four screws. Make sure that these screws are securely tightened.

2. Make sure that the amplifiers are located in a well-ventilated, cool area. Be certain that the side and rear panels are not obstructed, as the cooling fan brings air in from the rear and expels it at the sides. It is very important not to obstruct the airflow from the rear panel; heat buildup and premature failure may occur. If the amplifier is installed inside a cabinet that is enclosed on all sides, the front of the cabinet must remain open to allow sufficient flow-through ventilation to avoid overheating.

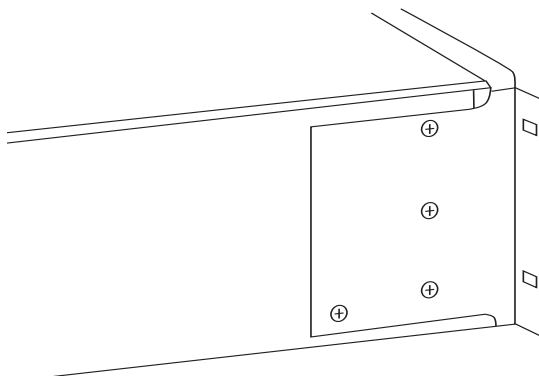
3. Using a helper to guide the unit into the rack, gently slide the AVA7 into place. Align the rack mounting holes to the rack ears of the equipment rack.

4. Starting with the bottom two screw holes and using two of the rack screws and plastic washers (if supplied with your rack), secure the AVA7 into the rack. It may be necessary to have a helper hold up the rear of the unit until you have started the threads of the screws. Once the

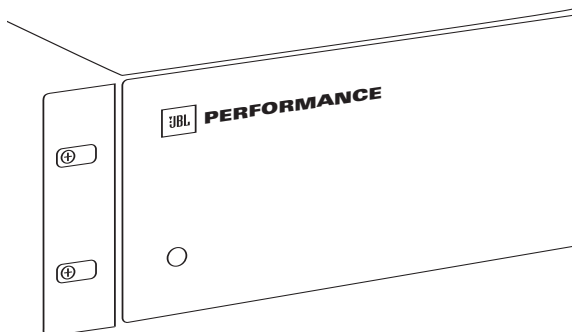
bottom mounting screws are installed, move to the top mounting screws. Once done, check and tighten all four screws. Always use all four screws when mounting any equipment.



Side view of amplifier without rack ear.



Side view of amplifier with rack ear attached.



Front view of amplifier with rack ear attached.

TROUBLESHOOTING

Problem: Amplifier does not turn on. Neither the red nor blue indicator lights are on.

Make sure that the amplifier is plugged in, and verify that there is the proper voltage at the wall outlet. Make sure the **Main Switch 6** on the rear panel is in the On position.

Problem: The **Standby Indicator 2** lights red, but it does not change to blue when the **Power Switch 1** is depressed.

If the amplifier is being used in a JBL Performance Series system, make sure that the surround processor is turned on, the **Main Switch 6** is in the On position, and there is a connection between the AVA7's **Trigger Input 7** and another device providing a power-on voltage trigger. Refer to the "CONNECTING YOUR SYSTEM" section for reference. If the amplifier is not being used with a JBL Performance Series AV1 or any other source providing a power-on trigger voltage signal, make sure that no connection is made to the **Trigger Input 7** of the AVA7.

Problem: There is no sound from the speakers, but the amplifier is on (**Standby Indicator 2** is lit in blue).

1. Make sure that the surround processor or equalizer is on, and that the correct source has been connected and selected.
2. Make sure that the correct outputs are connected from the surround processor or equalizer to the amplifier.
3. Make sure that the speakers are connected to the correct terminals. Check for short circuits at both ends of the speaker cables.

Problem: Not all of the amplifiers turn on in the system.

1. Make sure that all required cables are connected between system components. Refer to the "CONNECTING YOUR SYSTEM" section.
2. Make sure that each amplifier has its **Main Switch 6** in the On position.
3. Make sure the **Power Switch 1** on each amplifier is in the On position (so that its **Standby Indicator 2** is lit in blue when the cable is removed from its **Trigger Input Jack 7**).

Problem: Insufficient sound output level from the speakers.

Check that the output levels of the surround processor or equalizer are set properly.

Problem: Insufficient bass.

Verify that the speakers have been wired to the amplifier with the correct polarity.

Problem: Audible hum from the speakers.

1. Check the power outlets and make sure that there is a solid earth ground present. (The services of an electrician may be required.)
2. Make sure that all signal cables are routed away from power cords.
3. If these suggestions fail, experiment by running ground wires between the rear-panel screws of the amplifiers and the other system components, such as the surround processor or signal processing package.

If you still encounter difficulty after trying the above suggestions, call your JBL Authorized Dealer or JBL at 1.516.255.4JBL for further assistance.

AVA7 SPECIFICATIONS

<i>Rated Power Output</i>	125W per channel into 8 ohms, all channels driven
<i>THD</i>	<0.01%, 20Hz –20kHz
<i>Input Impedance</i>	20k ohms
<i>Sensitivity</i>	1V in = 100 watts out
<i>Frequency Response (at 1W)</i>	20Hz – 20kHz, +0, –0.25dB
<i>S/N Ratio (A-weighted at rated power)</i>	≥100dB
<i>Damping Factor (8 ohms)</i>	≥380
<i>Power Bandwidth 1% THD</i>	10Hz – 100kHz, +0, –3dB
<i>Intermodulation Distortion</i>	≤0.03%
<i>Dimensions (H x W x D)</i>	5-1/2" x 17-5/16" x 16-1/4" (140mm x 440mm x 413mm)
<i>Net Weight</i>	55.5 lb (25.19kg)
<i>Packaged Weight</i>	65.5 lb (29.73kg)

All features and specifications are subject to change without notice.



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Part No. 34-JBL-0015  6/05

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